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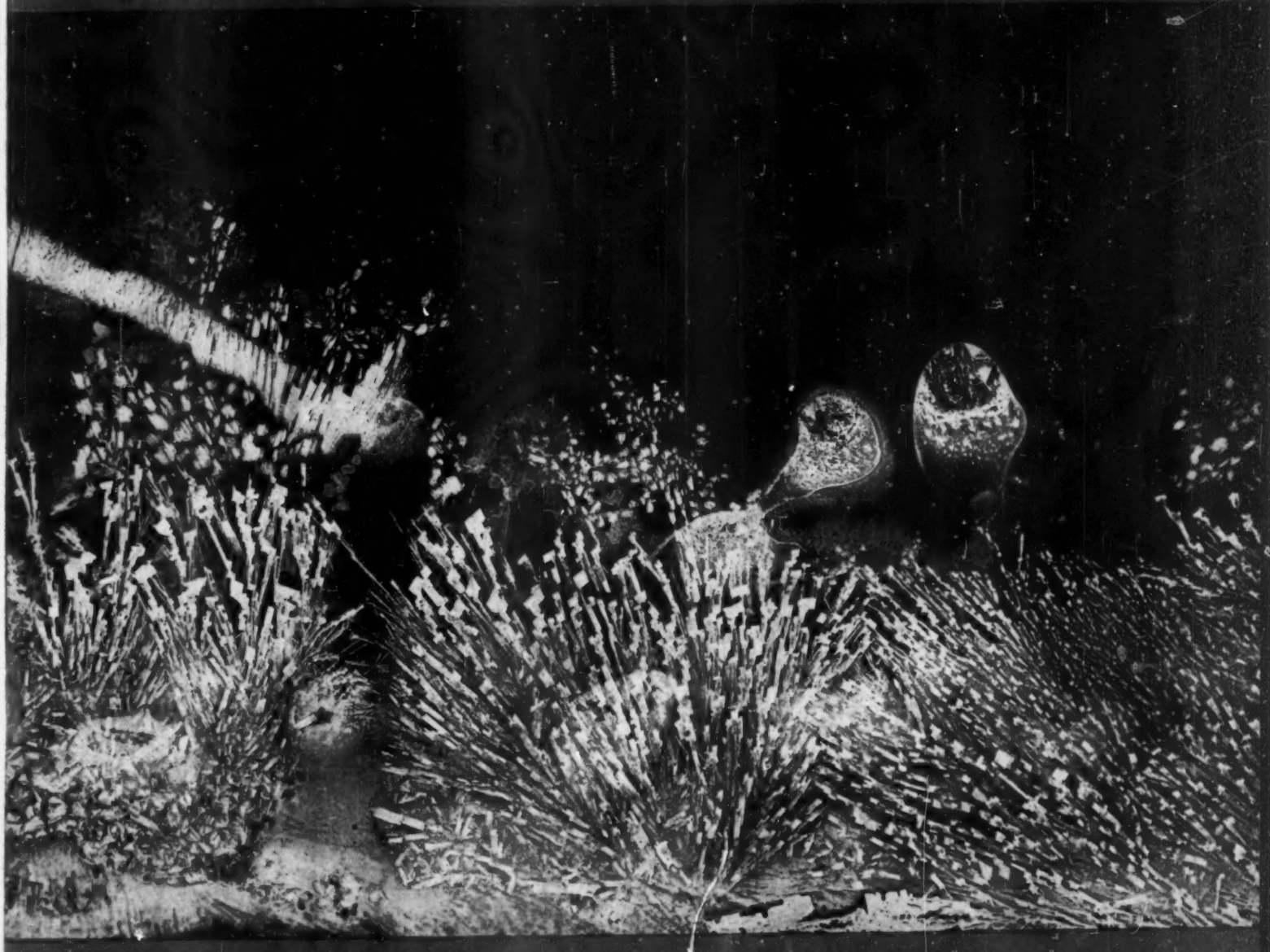
THE WEEKLY SUMMARY OF CURRENT SCIENCE • DECEMBER 26, 1942



Fantasy

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A SCIENCE SERVICE PUBLICATION

Index for Vol. 42 in this issue

Do You Know?

Beet sugar is chemically indistinguishable from cane sugar.

Parsley is exceptionally high in vitamin C, vitamin A, and iron.

Sprouting raw *soybeans* with moist heat improves their nutritive value.

Brazil exported only 495,642 sacks of *coffee* last September, as compared with 777,106 in September, 1941.

The Coast Guard is using portable *dental clinics* for remote stations, with drills operated by foot power.

In its search for *dolomite*, a source of war-vital magnesium, the Bureau of Mines reports outstanding deposits in 37 states.

Butter developed for shipping without refrigeration or for use in tropical countries combines pure butter oil with skim milk powder.

A profitable example of genetic *mutation* is the platinum fox, variant of the silver fox, which sold for thousands of dollars when it first appeared.

Agricultural tests have shown that *potatoes* planted across the slope on the contour yield 5% to 15% more than those planted up and down hill.

The presence of *insect pests* in stored grain is revealed by a crust on the surface and the development of hot spots, since pests not only eat the kernel but also produce heat and moisture in the bin.

Question Box

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PSYCHOLOGY

What precautions might be taken to prevent panic in dance halls and night clubs? p. 406.

POPULATION

What proportion of babies are born to mothers who are under 20 years old? p. 404.

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

Forty-eight percent of the Pacific Northwest is occupied by *national parks* and forests.

The climate of all the French territory in *North Africa* is similar to that of southern California.

The United States will receive more *coffee*, now that the large German-owned plantations have been taken over by the Guatemalan government.

The 1942 increase in *milk* production represents a "sea of milk big enough to float the entire U. S. Navy," says the Department of Agriculture.

For every inch of *rainfall*, an acre of land has to handle 27,000 gallons of water.

The *Solomon Islands* are a good potential source for plywood and high-grade veneers.

Earth shock caused by a bomb explosion is similar to an earthquake and affects all buildings except all-steel or concrete frame structures.

A new *glass insulating* material discovered in Denmark is "very light, heat- and sound-resistant and acid-proof," resembling American fiber glass.

SCIENCE NEWS LETTER

Vol. 42 DECEMBER 26, 1942 *No. 26*

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

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Cable address: Scienserve, Washington.

New York office: 310 Fifth Avenue, CHickering 4-4565.

Entered as second class matter at the postoffice at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The Science Observer, established by the American Institute of the City of New York, is now included in the SCIENCE NEWS LETTER.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N. Y. C., PEnnsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation.

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ASTRONOMY

Rare Clouds on Sun

Two interacting luminous solar prominences in eruption have been photographed at Mt. Wilson. Show that both positive and negative charges are there.

➤ TWO INTERACTING solar prominences in eruption, a rare sight on the sun, were photographed on Oct. 3, by Dr. Edison Pettit of the Mt. Wilson Observatory, it was announced in a report published by the Astronomical Society of the Pacific.

Solar prominences are the luminous clouds seen projecting above the edge of the sun during a total eclipse. Interactive prominences are those in which two or more are pulling material away from each other in the form of streamers. They are of great theoretical interest since such interaction indicates that both positive and negative electrical charges may exist within the same prominence.

The photographs were taken with a motion picture camera through a special device called an interference polarizing monochromator, an instrument only recently perfected for astrophysical use. Through the monochromator the sun appears as a cherry red disk of moderate brightness upon which markings can be seen which are totally invisible when viewed by a telescope in the ordinary way. The camera and monochromator were attached to a six-inch refracting telescope mounted in Dr. Pettit's backyard observatory.

Dr. Pettit, who was among the first to discover Nova Puppis on the morning of Nov. 10, made the first accurate photometric measurements of the nova's brightness in his backyard observatory.

When first seen upon the edge of the sun at 9:39 a.m., Pacific War Time, the object consisted of two small prominences, of which one 22,000 miles high was pouring streamers into another 9,000 miles high about 37,000 miles away. Although Dr. Pettit suspected that an eruption might be in progress, he hesitated to use the motion picture camera owing to a thickening sky and a limited supply of film. By 2:26 p.m., however, the character of the activity was no longer in doubt, the prominence then having risen to an elevation of 62,000 miles. Photography was commenced with the monochromator and continued until 4:24 p.m., when forced to halt by clouds.

The early exposures show the prominences blended into a single triangular shaped mass. This developed into a column which, as it rose, bent over like a whip and tended to return to a center of attraction in the nearby solar surface. Exposures made through rifts in the clouds reveal the column reaching down nearly to the sun's limb.

Measurements of the film showed the prominence first rising with a speed of 23,400 miles per hour which changed abruptly to 46,800; and then from 46,800 to 93,600. Between changes the motion was uniform, the sudden increases occurring within less than a minute.

These jumps in speed are a characteristic of the motion of eruptive prominences. Why the motion should change suddenly rather than by a gradual increase as is generally the case in nature is merely one of the many unexplained features connected with these mysterious solar appendages.

Science News Letter, December 26, 1942

NUTRITION

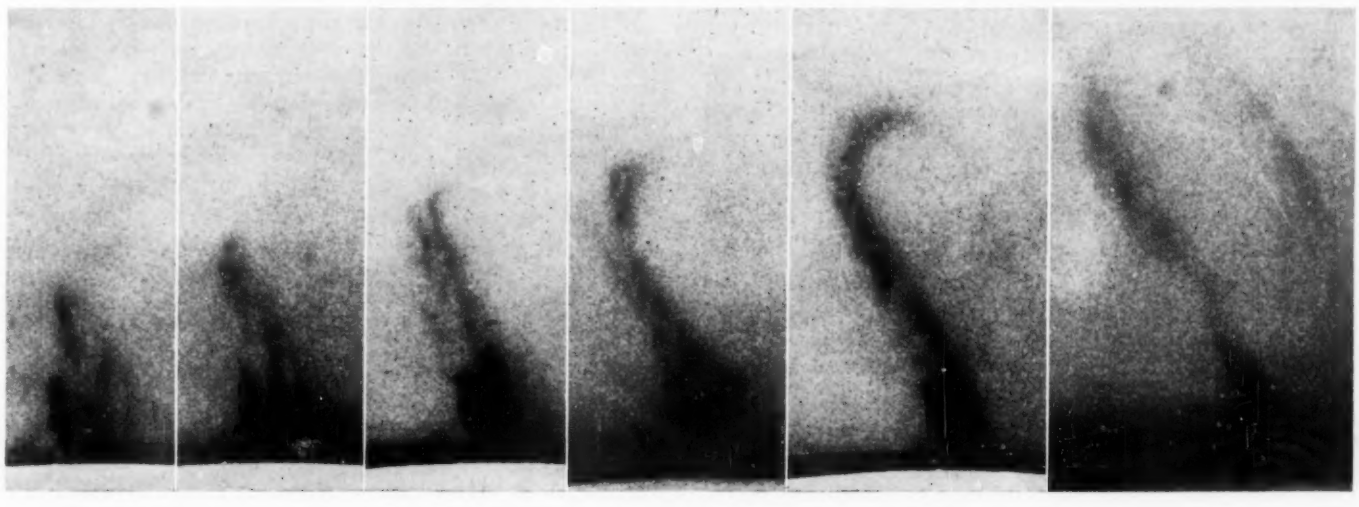
Vitamins Don't Stop Colds When Diet Is Adequate

➤ TAKING VITAMIN pills will not reduce the number of colds nor the severity nor duration of colds in persons on a reasonably adequate diet, it appears from experiments reported by Dr. Donald W. Cowan, Dr. Harold S. Diehl and Dr. A. B. Baker, of the University of Minnesota Students' Health Service (*Journal, American Medical Association,* Dec. 19).

Their experiments were made in two successive winters under carefully controlled conditions with several hundred University of Minnesota students who were especially susceptible to colds. The effects of large doses of vitamin C alone (the citrus fruit vitamin that prevents scurvy) and of large doses of vitamins A, B_1, B_2, C and D were tested.

Science News Letter, December 26, 1942

RARE—These photographs show the two rare blended prominences on the sun in eruption at intervals of 23 minutes. The luminous clouds towered at heights above the sun's limb of 66,000 miles for the one at the left and 161,000 miles for the last picture on the right. The photographs were made with a motion picture camera through an interference polarizing monochromator attached to a six-inch refracting telescope.



PSYCHIATRY

This War's Neurosis

More physical symptoms such as stomach ulcers and "soldier's heart"—less deafness, blindness and paralysis than in 1918, is prediction.

➤ THE WAR-CAUSED neuroses this time will be different from those of the last war, when we called them shell shock. There will be more physical symptoms, such as peptic ulcers and "soldier's heart," and less so-called functional symptoms of paralysis, trembling, hysterical deafness, blindness or paralysis of the vocal muscles. This is the prediction of Dr. Sandor Rado, psychiatrist of New York, based on his experience in the last war.

However, these breakdowns can be cured and prevented by prompt psychiatric treatment, whether the symptoms are called physical or emotional, says Dr. Rado, writing in the current issue of Psychosomatic Medicine.

Potential victims cannot be weeded out by any selective service process, he says, for they are apt to be outstanding examples of physical and mental health, many of them excellent soldiers, prior to the war experience which strains their endurance beyond the breaking point. When this point is reached, they collapse totally—physically, mentally and emotionally—and the organism unconsciously chooses those symptoms which will be most incapacitating, thus most effective in getting it out of an intolerable situation. This has nothing to do with malingering: it is a physical-emotional process like any other disease, over which the patient has no control.

This traumatic type of neurosis which can attack previously healthy people, is distinguished by Dr. Rado from the ordinary neurosis of civilian life in that it requires different treatment and cannot be predicted. Those who show predisposition to breakdown can and should be weeded out by pre-induction examination.

The spread of psychoanalytic knowledge is cited as the biggest reason for the changing symptoms of war neurosis, a change also reflected in civilian practice. Certain symptoms have lost their effectiveness since they are labelled "functional," "psychogenic," or "escape mechanisms." Others, supposed to be more physical, are still useful because they have not been so labelled. Some day, when all possible symptoms have been labelled with emotional tags, we may give up the useless distinction between "physical" and "emotional" diseases, as Dr. Rado suggests. The new approach summarized in psychosomatic medicine maintains that no disease can be either one or the other, since all contain both physical and psychological factors. Whether they are treated by primarily medical or psychiatric methods depends on the individual, not the symptoms.

Thus the treatment for war-caused traumatic neurosis will call for a psychiatrist, whether the symptom is a peptic ulcer or an anxiety attack. (This emphatically does not mean that every case of peptic ulcer needs the same treatment as a war-shocked soldier). Breakdowns can be prevented or shortened by early detection of symptoms, says Dr. Rado. While details of treatment will have to be adapted to the types of cases developed in this war, he indicates broad outlines to be followed.

Some method of hypno-catharsis is necessary, through hypnosis or hypnotic drugs, to induce the patient to re-live the traumatic experience and emotions which are in danger of being permanently forgotten, or "repressed." But Dr. Rado believes there will be relapse unless further treatment is given. The patient must be desensitized to all war memories, whether repressed or not, therefore these must be robbed of their power to terrify and turned into a source of pride and satisfaction.

He must be made to see the war as an ordeal which proved his endurance, rather than his failure. Obviously this attitude cannot be preached to him, but he must be helped toward it by the intricate therapeutic methods of a skilled psychiatrist. Medication will also play a part in treatment.

The enormous number of "shell shock" cases in the last war, which could not be explained organically, forced the acceptance of psychoanalytic concepts, according to Dr. Rado, but this was not done without misunderstanding and needless cruelty. The unconscious conflict of a conscientious soldier between military duty and self-preservation, which resulted in a "flight into illness" was misinterpreted as a conscious, deliberate attempt to escape. He was accused of malingering and given futile disciplinary measures. In other words, in changing the emphasis from "organic" to "psychogenic," the word unconscious was overlooked.

According to the psychosomatic approach, we are now in a transitional stage. Instead of looking for an organic explanation for every disease, we now look for the psychological explanation, but we have not yet abandoned the "either-or" type of thinking.

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POPULATION

Maintaining Birth Rate Falls on Women Over 30

➤ MOTHERS TODAY are younger, but the burden of maintaining our birth rate near its present level under war conditions will fall on the women over 30 years of age, statisticians of the Metropolitan Life Insurance Company declare.

In 1920, they report, women under 20 were contributing 8.6% of the total births for that year but by 1940 women of this age group contributed 11%. Women of 20 to 24 years also contributed an increasing percentage of children to the nation, from 28.1% in 1920 to 31.3% in 1940. During the same two decades, women of ages 30 to 34 contributed fewer children to the nation, the percentages dropping from 19 to 17.7%.

The percentage of younger women in the population, however, has decreased and that of older women has increased during the same two decades. This trend will probably increase. At the same time the war has interrupted family life most for the younger women who will consequently contribute fewer children. This places the burden of maintaining the birth rate on the women of 30 or over, which means the average size of existing families must be increased.

The unfavorable effect of the war on the birth rate of the immediate future may be moderated, because most married women of 30 years or more already have children so that their husbands are for the most part still out of the classes called for military service. In addition, many thousands of these families are now in better economic position than ever to rear more children.

Science News Letter, December 26, 1942

GENERAL SCIENCE

Carnegie at War

Annual report shows that war work absorbs major part of research staff and facilities of the Carnegie Institution of Washington.

➤ WAR WORK now absorbs the major part of the research staff and laboratory facilities of the Carnegie Institution of Washington, it is disclosed in the presidential report of Dr. Vannevar Bush.

Dr. Bush has taken on wartime duties as director of the U. S. Office of Scientific Research and Development and chairman of a joint committee on new weapons and equipment in addition to his permanent position as president of the Institution. His example has been followed by many members of the research staff, 34 of whom have taken leave of absence to devote full time to wartime tasks in the government, while 145 others who remain on the Institution payroll are devoting all of their time to the furtherance of the 23 research projects covered by 48 contracts with the government. In addition, these war tasks have necessitated the hiring of about 150 new employes.

All the physical facilities of the Institution have been placed at the disposal of the government, including practically all of the space in the administration buildings in downtown Washington. The executive work of the Institution itself is now carried on in a few offices in part of the old building.

This concentration on war effort does not mean, however, that the many peacetime research programs have been altogether discontinued. Some of the work carried on by the Institution requires uninterrupted series of daily observations, on such things as variations in terrestial magnetism, and these must not be stopped because no subsequent effort could ever fill in the gaps. Other projects are so near completion, and have already involved so heavy an investment of time and money, that it seems advisable to carry them through. One group of projects, the excavation and restoration of remains of ancient Mayan and Mexican civilizations, are being continued with direct government approval because of their value in the strengthening of inter-American cultural relations.

While the great majority of the Carnegie Institution's war-connected researches are necessarily secret and confidential, a few examples, out of many scores discussed in the report, include:

Efforts to develop varieties of hemp for the new fiber-production program that will yield little or no marihuana to would-be drug bootleggers. An apparent correlation between double or triple chromosome numbers and high marihuana concentration has been found.

Improvement of the Russian rubber-yielding dandelion, kok-saghyz, by breeding methods, especially by treatment with colchicine.

Discovery that there is more than one kind of chlorophyll in plants, and hence more than one kind of photosynthesis, the basal food- and fiber-forming process. The new food-making pigments have been found in certain of the lower water-plants knowns as algae, which are the ultimate food of fish and which may have had something to do with the formation of the world's oil pools.

Discovery that children in such diverse racial and cultural groups as the Dutch and Navajo show "a significant trend toward increase in weight and height among the children of today as compared with children of the same age group ten years ago."

Finding of four more of those rarest of anatomical specimens, human embryos in their first few days of existence. None of these was more than a sixteenth of an inch in diameter.

Observation of the still-scattering fragments of an exploded star that was first observed as a nova by the pioneer astronomer Kepler in 1604.

Confirmation of the rotation of those vast island universes known as spiral nebulae. The arms of these great aggregations of stars trail as they rotate.

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CHEMISTRY

Formation of Crystals Makes Holiday Fantasy

See Front Cover

➤ THE DELICATE fairy scene on the front cover of this week's SCIENCE NEWS LETTER is not from Jack Frost's garden. It is made from an unexposed photographic film on which crystals of photographic hypo have formed. Both experiment and resulting picture are provided by the Science Service staff photographer, Fremont Davis.

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CARRYING ORE—The nation's first steel-carcass conveyor belt, developed by the Goodyear Tire and Rubber Co., is used to speed iron ore up the 1,100 foot slope from the open pit mines of the Oliver Iron Mining Company, near Hibbing, Minn.

PSYCHOLOGY

Panic Prevention

Psychological precautions, as well as fireproofing, needed to avoid disaster due to panic in night clubs and other public places. Special problem in war time.

➤ COMMUNITIES tightening up on night clubs to avoid repetitions of the Boston and St. Johns fires and panics, need to consider psychological preparations as well as fireproofing.

Men and women may be killed in panics even when the actual danger of fire is small. But, if panic can be avoided, they can be gotten out of a crowded hall even though the danger is serious.

Here are some of the mental conditions likely to produce panic, as outlined by Dr. Edwin R. Guthrie, psychologist of the University of Washington, who has been working on Government problems in Washington, D. C.

1. When excited, men and women want to do something and do it immediately—in a hurry.

2. If they do not know what they should do and have formed no habits, as through fire drills, to govern what they will do, they are most likely to follow the crowd—take their signal from what they see other people doing. If many are pushing toward one exit, others will join the jam even though it is futile.

3. When excited, it is impossible to think clearly. In such circumstances, men and women are likely to act from habit. They use the door by which they came in or by which they usually go out. They do not look around for another means of getting out.

4. There are some states of mind in which men and women are more likely to panic—to become wildly excited or frightened by small causes. Anything which makes men jumpy, or peculiarly sensitive to small noises or other possibly frightening things, will make them panic-ripe. These are fatigue, anxiety, alcohol, hangovers, lack of sufficient vitamin B. A crowd in such an anxious or jittery state of mind might panic at the sight of a mouse. Exhausted soldiers have been panicked at the sight of a herd of frightened pigs.

Special precautions should be taken against panics in public places during wartime, because war is likely to develop the state of mind conducive of panic. In case of air raid, precaution against panic might be just as important for avoiding casualties as precaution against bomb hits.

Here are some of the measures that might be taken:

1. Provide more than one exit. Have them clearly marked and ready for use. Call attention to them by cards on tables, by announcements from the floor, by lights. Induce customers to form habits of leaving by the various exits—do not reserve these exclusively for use in case of fire. In the Boston night club, all the guests had entered by one door and were used to leaving by that same exit. Some of the performers, who were in the habit of using other exits, were led out safely.

2. Appoint "wardens" from among the personnel of the establishment, and drill them in what to do in case of emergency. Have them wear some armband or other sign of authority. Teach each of them to direct people in a certain part of the place to a certain exit. Most people have formed the habit of responding to commands given by someone in authority, provided the command is given in such a way that they can hear it and pay attention to it.

People in a panicky crowd are not carried away or governed by some mysterious "mob mind," Dr. Guthrie emphasized. "Frightened individuals in a crowd act just the way they might be expected to act under the circumstances," he said. "The trouble is that the crowd in a panic has not been prepared by previous training for this particular situation, and so they do what their previous training has taught them to do, which is to follow the example of others—to do what they see others do."

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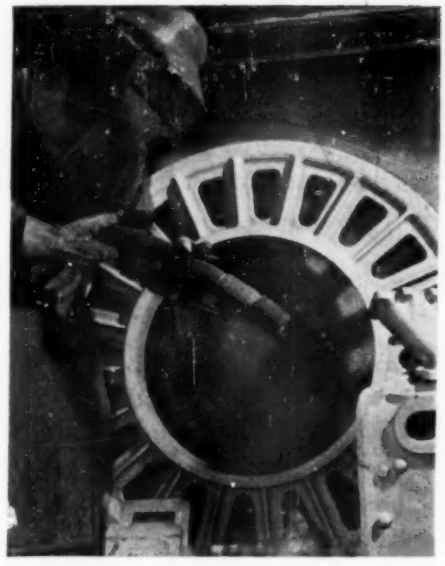
CHEMISTRY

Movie Films To Be Worn In Form of Raincoats

➤ THOUSANDS OF MILES of movie film will soon be worn by Americans in the guise of raincoats and other pyroxylin-coated fabrics, because of a recent WPB restriction on the use of vinyl resin and pyroxylin for civilian products, reports Wells Martin, head commercial specialist in the Protective Coating Section of the WPB Chemical Branch.



SANDBLASTING—In the war-important aluminum workers like this one sandblast the metal. Notice the peculiar safety clothing worn. This is an official Office of War Information photograph.

Rubber in civilian fabrics was replaced by vinyl resin synthetics. When this became a critical war material, production again shifted, this time to pyroxylin-coated fabrics, a nitro-cellulose product. But as America goes into action on an increasingly wide front, more nitro-cellulose is needed to make explosives and civilian use of prime nitrocellulose has been cut by half.

All movie film scrap is now available, however, to fill the gap. Old movies, cuttings, retakes—all are being reclaimed, for chemically it is the same nitro-cellulose, a compound of cotton and nitric acid.

Under present conditions, WPB officials expect that film scrap will be sufficient to tide us over.

Later it will be necessary for the ingenuity of laboratory workers to produce other substitutes. Practically every laboratory in this field is now working on the problem, it is reported. An oil combined with some resin will probably be next in the parade of products for waterproof garments, coated fabric, paper, cardboard and similar uses.

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EDUCATION

Woman Engineers Needed

Of about 47,500 women who will have received college degrees during the year ending in January, only 43 will have engineering degrees.

➤ WOMEN having an aptitude for engineering are urgently needed to relieve a growing shortage of male engineers, the American Society of Mechanical Engineers meeting in Rochester was told by Dr. Robert H. Baker, assistant director, and Mrs. O. S. Reimold, placement officer, of the War Industries Training School of the Stevens Institute of Technology, Hoboken, N. J.

But such women are few and generally not interested, and lack the background of physics and mathematics and of shop experience which are essential.

The National Roster of Scientific and Specialized Personnel, Dr. Baker pointed out, shows that approximately 47,500 women will graduate from our colleges and universities from February, 1942, through January, 1943. Of these, only 2,545, 5%, will have majored in some physical science. Mathematics and chemistry each account for about 1000 of them, physics takes 92, and only 43 are graduating with an engineering degree.

But all of the 45,000 majoring in the arts not already placed, estimated at 22,500, Dr. Baker believes, are available for technical training. The background can be supplied by special training to those who have the inclination and aptitude.

Surveys of the interests of college students made by C. A. Fulmer, he cited, showed that in a normal year, engineering ranked 15th with the women among 16 vocational choices. With the boys it ranked third among 17 choices. With the girls, nursing, art, fashion design, home economics, and secretarial work were the favorites. With the boys, aviation topped all else in popularity, with engineering, law, business and medicine following far behind.

Women were admitted to the Stevens War Training School on February 2, 1942, less than two months after Pearl Harbor. This was the first time that women had ever been admitted to any undergraduate course at the Stevens Institute.

Aptitude, performance and knowledge tests given by Stevens to both men and women revealed that the women score significantly lower than the men in knowledge of physics and in the space sense necessary to engineering. They score only slightly lower in knowledge of mathematics, while in number sense they probably excel men.

Experience at Stevens and psychological tests disclosed also that women excel men in clerical speed, reasoning, estimating, computing and report writing and are their equal in verbal resource. But among those who met the entrance requirements, about five out of ten men possessed suitable aptitudes and interest for engineering training, whereas only one or two out of ten women possessed these qualities.

All this indicates, Dr. Baker declared, that a different training should be provided for women than for men, and different jobs aimed at. Thus, the greatest demand for women is in drafting, for which they are well qualified because of their neatness and accuracy. But they are handicapped by lack of knowledge of shop practice and terminology, which men usually have. This should be supplied by preliminary instruction in the drafting course.

There is no lack of patriotic desire among women to do war work, but they are shy at engineering and must be enticed. Dr. Baker recommended that this begin in the high school, that more girls be induced to study mathematics and physical science. This would not bear fruit for two or three years or more, he said, but in case of a long war would be invaluable.

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CONVERTED—Scene in a whiskey distillery now making industrial alcohol. The operator is opening a valve to add yeast to the mash in a fermenting tank. This is an official photograph of the Office of War Information.

A substitute for cork has been developed in Jamaica from the roots of a swamp plant, the "cow apple."

The superiority of present *dyes* protects our soldiers wearing drab or jungle green uniforms; they will not fade to an easily-spotted yellow, as they did in the last war.

ASTRONOMY

Venus Returns

With the coming of the New Year, the brightest of all planets may be seen in the Western evening skies. Jupiter and Saturn also visible.

By JAMES STOKLEY

➤ WITH THE OPENING of a new year, we can begin to get in the evening sky a glimpse of the brightest of all the planets. This is Venus. During most of 1942 she has been a morning star, shining in the east before sunrise, for the benefit of early risers—or confirmed night owls. But now Venus, in her own journey around the sun, has swung around behind that body. A few months ago she was to the west of the sun, hence rose before it. But now she has come around to the east, and remains visible after sunset. Still so close to the sun that she sets during twilight, January brings us only a momentary view of her. But if you look to the southwest just after the sun goes down, especially toward the end of January, and see a brilliant point of light near the horizon, you'll know that you're looking at Venus. Keep on watching her, night after night, for in the coming months she will stay up later and later, and become increasingly brighter.

Because the accompanying pair of semi-circular maps depict the sky's appearance at 11:00 p.m., local war time, at the beginning of January, and about 10:00 p.m. on the fifteenth, Venus does not appear upon them. But two other planets do. These are Jupiter and Saturn which have been with us for many weeks. Jupiter is the brighter of the two—brighter indeed than any star or planet now visible after dark. He is high in the east, just to the right of Pollux, the more brilliant of the twins, Gemini. To the south, in Taurus, the bull, above and to the right of Aldebaran, is Saturn, the other planet, still exceeding in brilliance any of the stars except Sirius.

Nearest Star

This star, known also as the dog star, can easily be found in the southeast, in Canis Major, the great dog. This is the nearest naked-eye star visible from most of the United States, 8.7 light years away.

Between Saturn and Sirius is the magnificent constellation of Orion, the great warrior. This figure, perhaps, can be most easily recognized by three stars in a row which form Orion's belt. Above it is Betelgeuse, below it is Rigel. To the right of Betelgeuse is Bellatrix.

The twins, Gemini, have already been mentioned, the other twin, upper and fainter, being Castor. Between Gemini and Canis Major is Canis Minor, the lesser dog. In this shines Procyon, another brilliant star.

Practically over head at the times of the maps is Auriga, the charioteer, with first magnitude Capella. In addition, there is one other star now visible which rates as bright. This is Deneb, in Cygnus, the swan, low in the northwest. Because of its low altitude, however, much of its light is absorbed by the earth's atmosphere. That is why it is represented with the symbol of a much fainter star.

Other Planets

As for the other planets, not shown, Mercury is in the evening sky, near Venus, though considerably fainter and not visible. Mars is in Scorpius, the scorpion, which rises in the southeast about three hours ahead of the sun. It is so far away that it is scarcely brighter than a second magnitude star.

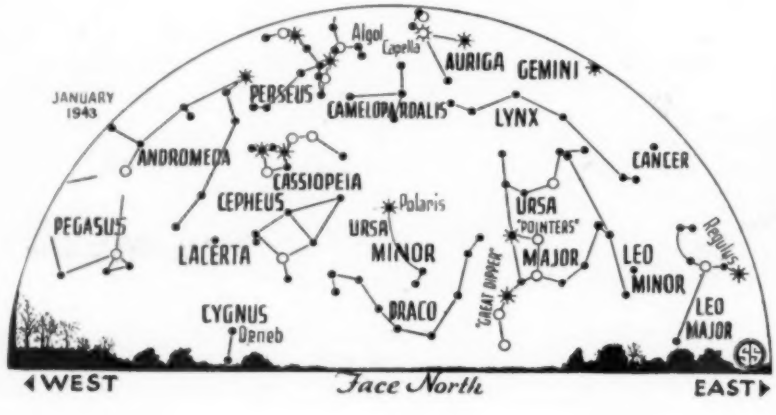
If you were to fill the whole hemisphere of sky with disks the size of the full moon, how many do you suppose would be required to fill it? The answer is about 103,130 and at this rate about 41, on the average, would be required to cover a single naked-eye star. Thus, the chance of a disk like the moon covering a bright star is very much rarer. However, in the course of its wanderings, the moon does occasionally eclipse, or "occult," a bright star, and sometimes these occultations occur in series. This month we have another in the series of occultations of Aldebaran, in Taurus, which is the most brilliant star that can hide behind the moon.

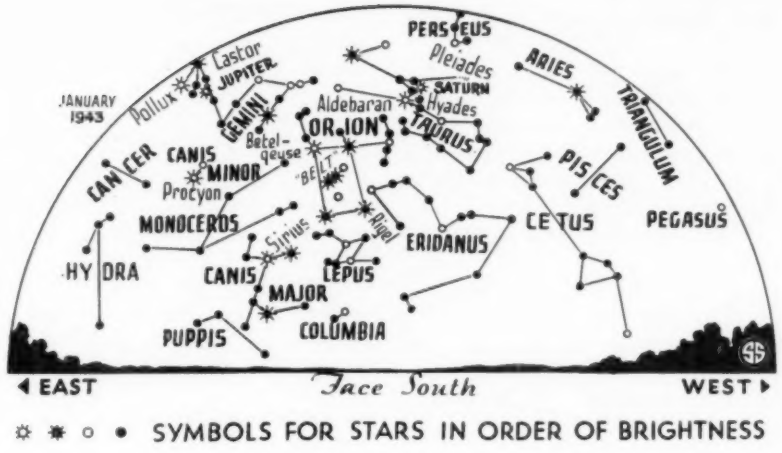
Ephemeris Gives Times

This takes place on the evening of January 16. In the American Ephemeris, which is the bible of the astronomer, published each year at the U. S. Naval Observatory in Washington, the times of such occultations are given, not only for Washington, but for three other locations. These are (1) a point in western Massachusetts near Pittsfield; (2) one near Quincy, Ill., and (3) one near Bakersfield, Calif. In the table below are given the times at which, on Jan. 16, Aldebaran is hidden and the times it reappears.

Place	*Disappears*	*Reappears*
Washington—		
EWT	10:19 p.m.	11:46 p.m.
1—EWT	10:28 p.m.	11:55 p.m.
2—CWT	8:47 p.m.	10:18 p.m.
3—PWT	6:00 p.m.	7:15 p.m.

Taking the times for the station nearest you, it will be possible for you to get some approximate idea of the time





that the occultation will take place where you are. The moon will be in a gibbous phase, three days after first quarter. Since the dark edge of the moon is the one away from the sun, and since the moon moves through the sky from west to east, it is the dark limb that is ahead.

Consequently, the star disappears behind the moon's invisible edge, and does so instantaneously, because of the fact that the moon has no appreciable atmosphere. This makes it particularly interesting to watch. When it reappears, it comes out from behind the moon's sunlit limb, and with the glare it may be a bit difficult to see. A pair of binoculars will be a help, however.

Astronomers are particularly interested in observing occultations and timing them accurately, because they make it possible to check up on the moon's motion. It might seem easy to predict the wanderings of the moon for years to come, but to do it with great precision is one of astronomy's most difficult problems, because the moon is pulled by so many different bodies. Consequently, these calculations have to be checked from time to time and occultations, not only of bright stars, but of fainter ones as well, offer an excellent opportunity of doing so.

Celestial Time Table for January

Jan.	*EWT*	
2	1:00 a.m.	Earth nearest sun; distance 91,447,000 miles.
4	6:06 a.m.	Moon passes Mars.
6	8:00 a.m.	Moon nearest, distance 221,600 miles.
	8:37 a.m.	New moon.
7	6:58 a.m.	Moon passes Venus.
	6:00 p.m.	Moon passes Mercury.
8	5:00 p.m.	Mercury farthest east of sun.
13	3:48 a.m.	Moon in first quarter.
16	3:23 p.m.	Moon passes Saturn.
	Evening	Occultation of Aldebaran; see text.
19	7:00 p.m.	Moon farthest, distance 252,510 miles.
20	8:19 a.m.	Moon passes Jupiter.
21	6:48 a.m.	Full moon.
29	4:13 a.m.	Moon in last quarter.

Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, December 26, 1942

NUTRITION

"Oranges for Victory"

➤ "ORANGES FOR VICTORY" might be adopted as a new slogan by citrus fruit growers and nutritionists after reading the eight military uses of vitamin C including treatment of T.N.T. poisoning reported by Dr. Harry N. Holmes, of Oberlin College (*Science*, Oct. 23).

Vitamin C, or ascorbic acid, of course, is found in many other fruits and vegetables besides oranges, and is also made synthetically. Annual output in the United States of the synthetic ascorbic acid may soon reach 100 tons, with our allies getting much of this, Dr. Holmes reports.

Latest military use for ascorbic acid is in treatment of T.N.T. poisoning. The physician in charge of a T.N.T. plant in Britain has reported confidentially to Dr. Holmes that tests have convinced him that T.N.T. destroys vitamin C and that he has successfully treated 57 cases of severe poisoning with rapid response to treatment. A number of T.N.T. plants in this country are now following Dr. Holmes' advice to give daily doses of vitamin C to their workers to prevent poisoning. Results have not yet been reported.

Poisoning due to tetryl used as booster charge in shells is now causing medical concern. Dr. Holmes suggests tests to determine whether workers exposed to tetryl have lowered amounts of vitamin C in their bodies. If so, daily doses of the vitamin should be given, Dr. Holmes advises.

The zinc oxide fume given off when brass is melted is causing symptoms somewhat reminiscent of lead poisoning which, Dr. Holmes states, suggests that vitamin C in the workers' bodies is being destroyed. He and Dr. Kathryn Campbell some years ago found that dust of lead and its compounds destroyed vitamin C in the bodies of workers and that daily doses of this vitamin in most instances resulted in great improvement in health.

Value of vitamin C in preventing heat prostration, to which soldiers in the tropics and North Africa as well as war industry workers are exposed, has already been reported.

Shock fom injury and surgical operations, allergic shock as in hay fever patients, and benzene and toluene poisoning are other military and war industry conditions that might be effectively warded off by vitamin C.

The vitamin plays a part in promoting healing of wounds, lessens some of the uncomfortable effects of arsenical treatment of syphilis and has recently given good results in treatment of insomnia. This last use of the vitamin mentioned by Dr. Holmes as of military value was reported by Dr. Louis J. Karnosh of Western Reserve Medical School.

Science News Letter, December 26, 1942

MEDICINE

Frequent Short Vacations Advised for Test Pilots

➤ TEST PILOTS should be given frequent short vacations with at least one week of rest in each seven weeks, to prevent chronic exhaustion, Dr. Jan H. Tillisch and Dr. Maurice N. Walsh, of Rochester, Minn., urge in a report to *War Medicine* (Dec. 4), published by the American Medical Association in cooperation with the Division of Medical Sciences of the National Research Council.

Chronic exhaustion occurs more often in test pilots than in transport pilots, these doctors discovered, a finding which they point out is not surprising in view of the nature of the test pilot's work.

Most common symptoms of chronic exhaustion in the test pilot are: chronic fatigue, a feeling of inward tension and

uneasiness, anxiety, difficulty in concentration, insomnia, irritability, headache, gastrointestinal disturbances and a generally increased awareness of and a preoccupation with bodily processes.

Flying, even high altitude flying, is not enough by itself to cause the chronic exhaustion. Long hours of hard work and the emotional strain of flying a new and at times hazardous airplane are the factors that bring on the exhaustion in the test pilot.

"Several things can be done to prevent this chronic exhaustion state," the doctors report. "Good physical condition should be assured by frequent medical examinations and corrections of defects. At least eight hours of sleep a night should be obtained. A pilot should keep himself in good physical condition by regular exercise.

"More than two or three high altitude test flights in succession should be avoided.

"The importance of hobbies in securing mental relaxation should be emphasized, and a pilot should be encouraged to cultivate some. The most satisfactory hobbies are those which are not related to one's everyday occupation and which involve making something with the hands or forming collections, so that a person can enjoy the feeling that he has created something worth having. The indiscriminate use of sedative agents by pilots in an effort to dissipate nervous tension cannot be condemned too strongly. A sedative should be taken only when it is prescribed by a physician, and while under its influence a pilot should not fly. The continued use of stimulants, such as alcohol or amphetamine sulfate, is dangerous, as either one may lead to errors of judgment."

Science News Letter, December 26, 1942

● RADIO

Saturday, January 2, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Louis I. Dublin, third vice-president and statistician of the Metropolitan Life Insurance Company, will forecast "What's Ahead in Health."

Monday, January 4, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Worlds Begin" will be the subject of the program.

ENGINEERING

Good Camouflage or None

➤ CAMOUFLAGE has been developed into a complex art and science to conceal vital points from enemy detection, Greville Rickard, camouflage specialist of the Office of Civilian Defense, reported to the American Institute of Chemical Engineers meeting in Cincinnati.

It is much more than painting a weird design on a battleship or putting some branches over a gun emplacement. Better no camouflage, or merely a tone-down than too much badly done, he warned. A design detected as probably camouflage makes that spot an immediate target of suspicion.

Electric light barrages, smoke, blackouts, and structural effects are some of the methods revealed by Mr. Rickard as under study by U. S. camouflage specialists.

"Blackout in practice has come to be a field apart, yet it is definitely a form of camouflage," Mr. Rickard said. "Masses, shapes, planting materials, straightness of line, continuity of line, regularity, symmetry, repetition, shadows, reflections, contrasts of water and land, all have degrees of visibility on all but the blackest of nights. We are assured from England that whatever serves successfully as camouflage by day, outside of color, serves well also for camouflage by moonlight. Furthermore, it is during the hours between twilight and dawn that smoke as a screen has been found of especial value in many areas."

Science News Letter, December 26, 1942

One-fifth of the 3,072 counties in the United States lack *hospital* facilities.

Chicory, which some people like to mix with coffee, can be grown wherever sugar beets are grown.

Lice, according to new experiments, prefer living on animals suffering from a Vitamin B_2 deficiency; rats fed with riboflavin had no more attraction for them.

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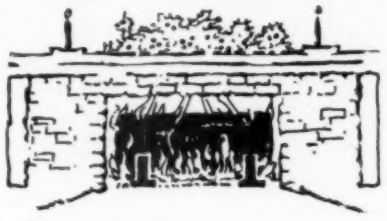
ETHNOLOGY

NATURE RAMBLINGS by Frank Thone



The Yule Log Returns

➤ WITH FURNACE oil strictly rationed over a considerable part of the country, and the situation a bit uncertain even as to coal, many a neglected fireplace has been cleaned out and now supplements the more modern but underfed furnace in keeping the house warm. So the stage is all set for a return of the Yule log.

To be sure, in most present-day city and suburban homes the fireplace isn't big enough to accommodate a full-sized Yule log. Still, if the spirit is there the shorter bit of timber will flame and crackle with as much holiday cheer as if it were the whole bole of an oak tree in a baronial hall.

Yule-log burning isn't just something to be done on Christmas day only. The ancient, pre-Christian Yule celebration that signalled the passing of the shortest day was a prolonged affair, lasting as long as the meat and the ale held out. As Yule became Christmas, the festival season traditionally extended from Christmas eve to the Feast of the Epiphany, which comes on Jan. 6—the Twelfth Night of English Renaissance observation. So the Yule log had plenty of time, big as it used to be, to flame and flicker before the last of it had smoldered to ashes.

In the semi-baronial days of our own ante-bellum South, there was on many plantations an accepted unwritten rule that the black field hands need not labor outdoors as long as the Yule log was alight. The Negroes would take advantage of this by selecting the biggest and toughest gum-tree trunk they could find and sinking it under water for weeks beforehand, to make it as slow-burning as possible. Sometimes one of these nearly fireproof Yule logs would simmer away for a month.

Science News Letter, December 26, 1942

• New Machines and Gadgets •

⚙ *PRODUCTION of precision lenses, the "glass eyes" of gunsights, binoculars and other military instruments, has been greatly speeded by a diamond-impregnated grinding machine which automatically grinds curves or planes on glass. A wide range of curves can be ground with the device and from one to fifty lenses made in a single operation, depending on the size. The War Department is equipping certain plants with the device, it is reported.*

Science News Letter, December 26, 1942

⚙ *DRAUGHT beer in some bars and restaurants is now coming to the ultimate consumer via pipelines of transparent plastic.*

Science News Letter, December 26, 1942

⚙ *LUMINOUS bait for fishermen, molded of phosphorescent plastic, has recently been patented.*

Science News Letter, December 26, 1942

⚙ *TESTING and breaking-in aircraft engines is done more efficiently by a new apparatus now being installed in plants. More accurate data and recordings are made by one man from a single control point, the manufacturers report, than by previous methods which required constant attention of at least two trained engineers and an assistant. A maze of wires and tubes connect the engine with testing devices which are remotely controlled by the test engineer sitting at his desk outside the test room.*

Science News Letter, December 26, 1942

⚙ *A STIRRUP PUMP for incendiary bombs, made of wood with a plastic hose, not only saves metal but throws a jet of water more than 35 feet, which is claimed to be 25% farther than the performance of any metal pump on the market.*

Science News Letter, December 26, 1942

⚙ *INDUSTRIAL gas masks protect the wearer against carbon monoxide and other insidious, odorless gases for about two hours at a time. Then a luminous dial warns the worker that the filter has been exhausted and needs a refill.*

Science News Letter, December 26, 1942

⚙ *SYNTHETIC crockery now used by the Navy, is made of a melamine resin plastic, to avoid breakage when the guns are fired and the ship skids sideways. The saucers are molded to allow a 30-degree roll before the cup overturns, and the soup plates are also adapted to a high sea. In addition to being lightweight and easily stacked, the new tableware is said to be highly stain-resistant and odorless.*

Science News Letter, December 26, 1942

⚙ *SMALL-FLAKE mica, essential to the manufacture of electrical equipment for the armed forces, can be quickly sorted with a new process of electrostatic grading. Powdered mica is subjected to charges from a grid electrode, attracting the thinner particles and leaving the heavier ones.*

Science News Letter, December 26, 1942

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 137.*

ASTRONOMY

Harvard Astronomer Discovers New Comet

➤ A NEW comet has been discovered by Dr. Fred L. Whipple of Harvard Observatory. Dr. Whipple spotted it on a patrol camera plate taken at Harvard's Oak Ridge station on Dec. 7. It was located about six degrees south of Jupiter.

Once the comet was found, Dr. Whipple was able to detect it on 20 plates taken as far back as Nov. 1, but it does not appear on photographs taken during October.

The Whipple comet was later sighted by Prof. G. Van Biesbroeck of Yerkes Observatory, Williams Bay, Wis., and observations made on several nights show that the comet is approaching the sun, and thereby coming closer to the earth. On Nov. 17 the brightness of the comet was reported as 12th magnitude. On Nov. 29, the brightness had increased to the 11th magnitude. The comet itself was then diffuse with a central condensation or nucleus.

On Dec. 13 and 14 the brightness had increased to the 8th magnitude. This was still too faint to be seen with the unaided eye, although it could be spotted with a fair-sized telescope. The comet has developed a short tail with a length of 40 minutes of arc.

Science News Letter, December 26, 1942

Satisfactory paper can be made from *nettles*, British experience shows.

TEC-W-1281

First Glances at New Books

➤ ENTERTAININGLY WRITTEN account of an unusual expedition to the Solomons by a resourceful young artist and her friend, illustrated by vivid sketches and portraits is HEADHUNTING IN THE SOLOMON ISLANDS: Around the Coral Seas, by Caroline Mytinger (*Macmillan,* $3).

Science News Letter, December 26, 1942

➤ THE BREAKDOWN OF FIJIAN society following the influx of both the white man and Indian labor, together with colonial problems in establishing a new economic structure, are described in this comprehensive anthropological study, FIJI, LITTLE INDIA OF THE PACIFIC, by John Wesley Coulter, (*Univ. Chicago Press,* $2) formerly head of the Geography Department at the University of Hawaii.

Science News Letter, December 26, 1942

➤ TRAVEL in a part of the world where travel is now impossible, northwestern New Guinea, is described in TRAIL OF THE MONEY BIRD (*Harper,* $3.50) by Dillon Ripley, who was there on an ornithological collecting expedition half-a-dozen years ago. All the experiences he relates were interesting, many of them exciting, some quite amusing.

Science News Letter, December 26, 1942

➤ BIOLOGY FOR STUDENTS in a general survey course is well presented by three University of Florida faculty members, J. Speed Rogers, Theodore H. Hubbell and C. Francis Byers, in a new text, MAN AND THE BIOLOGICAL WORLD (*McGraw-Hill,* $3.50). The course covers both animal and plant life, with perhaps greater stress on animals (including the human species); it is dynamic, with much space given to physiology, ecology and evolution and relatively less to details of structure and classification.

Science News Letter, December 26, 1942

➤ FUTURE GENERATIONS will not judge us as charitably as we do our forebears, if we continue to waste soil, forests and other vital resources as they did. After all, they knew no better, whereas we have the knowledge necessary unto salvation, and we shall be very properly damned if we fail to make use of it. An excellent working stock of this saving knowledge has been prepared by Ollie E. Fink, in CONSERVATION FOR TOMORROW'S AMERICA, issued by the (*Ohio Division of Conservation and Natural Resources,* 50 cents). Intended primarily for use in Ohio's very progressive program of nature and conservation education, it contains much that will be found of value far outside the boundaries of that state.

Science News Letter, December 26, 1942

➤ WHAT WEATHER MEANS to fliers, together with a simple exposition of the principles of air navigation, are well fitted together in G. R. Harrison's VISIBILITY UNLIMITED (*Morrow,* $4). An excellent book to put into the hands of the young man (or woman) who hopes to be flying soon. Good for the air-minded non-flying person, too.

Science News Letter, December 26, 1942

➤ MARVELS of the near-at-hand and the commonplace are brought to us by the vivid words and striking pictures of Edwin Way Teale's NEAR HORIZONS (*Dodd, Mead,* $3.75). Just by looking closely and scaling them up a little, such ordinary insects as katydids and dragonflies are made as wonder-arousing as aard-varks or tapirs. In these days of necessarily restricted travel, it might pay all of us to go out into our own back yards and discover new worlds.

Science News Letter, December 26, 1942

➤ CYTOLOGY used to be mainly the study of dead cells, killed, fixed and stained. The revolution that has taken place in this subject in the past couple of decades is attested even in the title of a new work, CYTOLOGY AND CELL PHYSIOLOGY (*Clarendon Press,* $6). Most significant is the fact that the group of workers who wrote it under the editorship of Geoffrey Bourne includes biochemists as well as "straight" cytologists.

Science News Letter, December 26, 1942

➤ RESEARCH LABORATORIES are the last American frontier of discovery. Their social importance and general principles of management are outlined in INDUSTRIAL RESEARCH, by F. Russel Bichowsky (*Chemical Publishing Co.,* $2.50). The book is primarily for the business executive who has, or may have, a research department in his organization, or for the research director.

Science News Letter, December 26, 1942

➤ MODERN ALCHEMY has at last achieved the transmutation of the elements. More important, common use of artificial radioactivity was born of "atom smashing." These techniques have been of importance, not only to physicists, but to the biologist, the chemist and the medical research worker. It is for them that APPLIED NUCLEAR PHYSICS, by Ernest Pollard and William L. Davidson Jr. (*Wiley,* $3) presents the related facts and methods of nuclear physics. Technical aspects are emphasized but most of the elaborate theoretical approach has been eliminated.

Science News Letter, December 26, 1942

➤ COMPREHENSIVE INFORMATION on rationing of food and other commodities in countries all over the world since the war began is presented by the Economic Intelligence Service of the League of Nations in WARTIME RATIONING AND CONSUMPTION (*Columbia Univ. Press,* $1). Professional workers will welcome this compendium, while many laymen will also find it worth careful reading.

Science News Letter, December 26, 1942

Books of the Week

ADVENTURE IN BLOOD TRANSFUSION—Bertram M. Bernheim—*Smith and Durrell,* 182 p., $2.50.

APPLIED NUCLEAR PHYSICS—Earnest Pollard and William L. Davidson Jr.—*Wiley,* 249 p., illus., $3.

BIRD DISPLAY — Edward A. Armstrong — *Cambridge Univ. Press* — 381 p., illus., $5.50.

ELEMENTARY MATHEMATICS—Hyman Levy —*Ronald Press,* 216 p., $1.50.

FIGHTER FACTS AND FALLACIES—John G. Lee—*Morrow,* 63 p., illus., $1.25. Some of the fundamentals of flight told simply and clearly in brief text and pictures.

FIJI: LITTLE INDIA OF THE PACIFIC—John Wesley Coulter—*Univ. Chicago Press* — 156 p., $2.

GUIDE TO EASTERN FERNS — Edgar T. Wherry—*Science Press,* 252 p., illus., $1, 2d edition.

HEADHUNTING IN THE SOLOMON ISLANDS AROUND THE CORAL SEA—Caroline Mytinger—*Macmillan,* 416 p., illus., $3.

INDUSTRIAL RESEARCH—F. Russell Bichowsky — *Chemical Publishing Co.,* 126 p., $2.50.

MAN'S POOR RELATIONS—Earnest Hooton —*Doubleday, Doran,* 403 p., illus., $5. A history of the primates.

MATHEMATICS IN AVIATION (Air-Age Education Series)—George Osteyee—*Macmillan,* 186 p., 64c.

MENTAL HEALTH IN COLLEGE—Clements C. Fry and Edna G. Rostow—*Commonwealth Fund,* 365 p., $2.